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09/727,297	11/29/2000	Francesco Pappalardo	854063.596	4071

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EXAMINER	
BELL, MELTIN	

ART UNIT	PAPER NUMBER
2121	

DATE MAILED: 10/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/727,297	PAPPALARDO ET AL.	
	Examiner	Art Unit	
	Meltin Bell	2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-17 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

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DETAILED ACTION

This action is responsive to application **09/727,279** filed **November 29, 2000**.

Claims 1-17 have been examined.

Priority

Applicant is advised of possible benefits under 35 U.S.C. 119(a)-(d), wherein an application for patent filed in the United States may be entitled to the benefit of the filing date of a prior application filed in a foreign country.

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Italy on November 30, 1999. It is noted, however, that applicant has not filed a certified copy of the T099A 001056 application as required by 35 U.S.C. 119(b).

Information Disclosure Statement

Applicant is respectfully reminded of the ongoing Duty to disclose 37 C.F.R. 1.56 all pertinent information and material pertaining to the patentability of applicant's claimed invention, by submitting in a timely manner PTO-1449, Information Disclosure Statement (IDS) with the filing of applicant's application or thereafter.

The information disclosure statement filed May 21, 2001 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because of missing or inaccurate information in the listing:

The *Watanabe et. al.* reference is missing the month of publication.

It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

Drawings

The United States Patent and Trademark Office of Draftperson's Patent Drawings Review have reviewed the formal drawings.

The drawing is objected to because it is not labeled Figure 1.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is required in correcting any errors of which applicant may become aware in the specification.

The disclosure is objected to because of the following informalities:

Figure 1 should be listed in the Brief Description of the Drawings.

Appropriate correction is required.

Claim Interpretation

Office personnel are to give claims their **"broadest reasonable interpretation"** in light of the supporting disclosure. *In re Morris,* 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. *In re Prater,* 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551(CCPA 1969). See *also *In re Zletz,* 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322(Fed. Cir. 1989) ("During patent examination the pending claims must be interpreted as broadly as their terms reasonably allow .... The reason is simply that during patent prosecution when claims can be amended, ambiguities should be recognized, scope and breadth of language explored, and clarification imposed .... An essential purpose of patent examination is to fashion claims that are precise, clear, correct, and unambiguous. Only in this way can uncertainties of claim scope be removed, as much as possible, during the administrative process."). *see* MPEP § 2106

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 12 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Support for this 35 U.S.C. 112, first paragraph rejections comes from MPEP 2164.07(I)(A):

"As noted in *In re Fouche*, 439 F.2d 1237, 169 USPQ 429 (CCPA 1971), if "compositions are in fact useless, appellant's specification cannot have taught how to use them." 439 F.2d at 1243, 169 USPQ at 434. The examiner should make both rejections (i.e., a rejection under 35 U.S.C. 112, first paragraph and a rejection under 35 U.S.C. 101) where the subject matter of a claim has been shown to be nonuseful or inoperative.
The 35 U.S.C. 112, first paragraph, rejection should indicate that because the invention as claimed does not have utility, a person skilled in the art would not be able to use the invention as claimed, and as such, the claim is defective under 35 U.S.C. 112, first paragraph."

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites the limitation "fourth output datum" in line 7. There is insufficient antecedent basis for this limitation in the claim.

Claim 10 recites the limitation "the comparator" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The invention as disclosed in claim 12 is directed to non-statutory subject matter. Claim 12 is rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a credible asserted utility or a well established utility.

Claim 12 is not claimed to be practiced on a computer nor stored in a computer readable medium. Because the claim is in the technological arts and is not claimed to be practiced on a computer and/or stored on a computer readable medium, it is not limited to practical applications in the technological arts. Specifically, the claim is a method disclosing ideas abstractly from any particular practical application, such as a program running on a computer and stored in a computer readable medium or memory. On that basis alone, the claim is clearly nonstatutory.

Regardless of whether the claim is in the technological arts, it is not limited to practical applications in the technological arts. Examiner finds that *In re Warmerdam*, 33 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994) controls the 35 USC 101 issues on that point for reasons made clear by the Federal Circuit in *AT&T Corp. v. Excel Communications, Inc.*, 50 USPQ2d 1447 (Fed. Cir. 1999). Specifically, the Federal Circuit held that the act of:

"taking several abstract ideas and manipulating them together adds nothing to the basic equation." *AT&T v. Excel* at 1453 quoting *In re Warmerdam*, 33 F.3d 1354, 1360 (Fed. Cir. 1994).

Examiner finds that Applicant's "inputs" are just such an abstract idea. Examiner bases his position upon guidance provided by the Federal Circuit *In re Warmerdam*, as interpreted by *AT&T v. Excel*. This set of precedents is within the same line of cases as the *Alappat-State Street Bank* decisions and is in complete agreement with those decisions. *Warmerdam* is consistent with *State Street's* holding that:

"Today we hold that the *transformation of data, representing* ***discrete dollar amounts****, by a machine through a series of mathematical calculations into a final share price*, constitutes a practical application of a mathematical algorithm, formula, or calculation because it produces 'a useful, concrete and tangible result" – *a final share price momentarily fixed for recording purposes and even accepted and relied upon by regulatory authorities and in subsequent trades.*" (emphasis added) *State Street Bank* at 1601.

True enough, that case later eliminated the "business method exception" in order to show that business methods were not per se nonstatutory but the court clearly *did not* go so far as to make business methods *per se statutory*. A plain reading of the excerpt above shows that the Court was *very specific* in its definition of the new *practical application*. It would have been much easier for the court to say that "business methods were per se statutory" than it was to define the practical application in the case as "...the transformation of data, **representing discrete dollar amounts**, by a machine through a series of mathematical calculations into a final share price..."

The court was being very specific.

Additionally, the court was also careful to specify that the useful, concrete and tangible result it found was "a final share price momentarily fixed for recording purposes and even accepted and **relied upon by regulatory authorities and in subsequent trades**."

Applicant cites no such specific results to define a useful, concrete and tangible result. Neither does Applicant specify the associated practical application with the kind of specificity the Federal Circuit used.

Furthermore, in the case In re Warmerdam, the Federal Circuit held that:

"**the dispositive issue** for assessing compliance with Section 101 in this case is whether the claim is for a process that goes beyond **simply manipulating 'abstract ideas' or 'natural phenomena'**. ...As the Supreme Court has made clear, '[a]n idea of itself is not patentable... taking several abstract ideas and manipulating them together adds nothing to the basic equation." In re Warmerdam 31 USPQ2d at 1759 (emphasis added).

In the present case, the Examiner finds that Applicant manipulated a set of abstract "inputs" for performing logical fuzzy union and intersection operations in the **abstract**. Under Warmerdam, the result of such manipulations is not statutory.

Since *Warmerdam* is within the *Alappat-State Street Bank* line of cases, it takes the same view of "useful, concrete, and tangible" the Federal Circuit applied in *State Street Bank*. Therefore, under *State Street Bank*, this could not be a "useful, concrete and tangible result". There is only manipulation of abstract ideas.

The Federal Circuit validated the use of Warmerdam in its more recent AT&T Corp. v. Excel Communications, Inc. decision. The court noted that:

Finally, the decision in *In re Warmerdam*, 33 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994) is not to the contrary. *** The court found that the claimed process did nothing more than **manipulate basic mathematical constructs** and concluded that "*taking several abstract ideas and manipulating them together adds nothing to the basic equation*"; hence, the court held that the claims were properly rejected under Section 101.... Whether one agrees with the court's conclusion on the facts, the holding of the case is a straightforward application of the basic principle that mere laws of nature, natural phenomena, and abstract ideas are not within the categories of inventions or discoveries that may be patented under Section 101." (emphasis added) *AT&T Corp. v. Excel Communications, Inc.*, 50 USPQ2d 1447, 1453 (Fed. Cir. 1999).

The fact that the invention is merely the manipulation of abstract ideas is indisputable. The objects referred to by Applicant's phrase "first and second inputs" are simply constructs in the abstract. Consequently, the necessary conclusion under *AT&T,*

State Street and *Warmerdam*, is straightforward and clear. The claim takes several abstract ideas (i.e., "inputs" in the abstract) and manipulates them together adding nothing to the basic equation. Accordingly, claim 12 is properly rejected along with its dependents 13-17.

Also, to Constitutionally interpret the word "process", the Supreme Court has held that:

"**** A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject matter to be transformed and reduced to a different state of thing. *** The process requires that *certain things* should be done with *certain substances*, and in a *certain order*; but the tools to be used in doing this may be of secondary consequence." (emphasis added) *Diamond, Commissioner of Patents and Trademarks v. Diehr and Lutton*, 209 USPQ 1, 6 (1981) quoting *Cochrane v. Deener*, 94 U.S. 780, 787-788 (1876).

This Constitutional interpretation of the word "process" is a long-standing one that the Supreme Court requires to be applied in interpreting 35 U.S.C. 101. *Diamond v. Diehr* at 6. Consequently, the use of that interpretation is *Constitutionally required* when we interpret the Federal Court's standard that a "new and useful process" is one that produces a "useful, concrete and tangible result". Cf. *State Street Bank and Trust Co. v. Signature Financial Group, Inc.*, 47 USPQ2d 1596, 1600-1601 (Fed. Cir. 1998).

Applicant discloses no "certain substances" that have been "transformed or reduced" in that Applicant's claims disclose no *specific* computer-readable medium, no manipulation of *specific* data representing physical objects or activities (pre-computer activity), nor do they disclose any *specific* independent physical acts being performed by the invention (post-computer activity). Implementation or utilization of the claimed invention does not include the use of a computer, processor, computer readable medium or memory for storing and executing such programs. The claims merely

manipulate abstract ideas in general without limitation to a practical application where "certain substances" are transformed or reduced.

On this basis, claim 12 is rejected under 35 U.S.C. 101.

Claim 12 is also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a credible asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4-17 are rejected under 35 U.S.C. 102(b) as being anticipated by *Miyazawa et. al.* U.S. Patent Number 5,343,553 (August 30, 1994).

Regarding claim 1:

Miyazawa et. al. teaches,

- a calculation circuit for calculating logical fuzzy union and intersection operations (column 2, lines 11-14,

"a calculation circuit for obtaining a minimum value and a calculation circuit for obtaining a maximum value for use in a digital fuzzy inference system, which are simple in construction")

- subtracter and comparison means using the sign of the difference (column 2, lines 44-48,

"a calculation circuit for obtaining a difference between binary data of the inflection point and input binary data and multiplier or divider for multiplying or dividing the difference by a one of values which is in accordance with a plus or minus sign of the difference")

- a data selection means in a fuzzy union and intersection calculation circuit (Figure 31)

Regarding claim 4:

Miyazawa et. al. teaches,

- a calculation circuit for calculating logical fuzzy union and intersection operations (column 2, lines 11-14,

"a calculation circuit for obtaining a minimum value and a calculation circuit for obtaining a maximum value for use in a digital fuzzy inference system, which are simple in construction")

- subtracter and comparison means using the sign of the difference (column 2, lines 44-48,

"a calculation circuit for obtaining a difference between binary data of the inflection point and input binary data and multiplier or divider for multiplying or dividing the difference by a one of values which is in accordance with a plus or minus sign of the difference")

- a data selection means in a fuzzy union and intersection calculation circuit (Figure 31)

- identity selection means within the comparison means (Figures 31 and 36)

Regarding claim 5:

Miyazawa et. al. teaches,

- a calculation circuit for calculating logical fuzzy union and intersection operations (column 2, lines 11-14,

"a calculation circuit for obtaining a minimum value and a calculation circuit for obtaining a maximum value for use in a digital fuzzy inference system, which are simple in construction")

- subtracter and comparison means using the sign of the difference (column 2, lines 44-48,

"a calculation circuit for obtaining a difference between binary data of the inflection point and input binary data and multiplier or divider for multiplying or dividing the difference by a one of values which is in accordance with a plus or minus sign of the difference")

- a data selection means in a fuzzy union and intersection calculation circuit (Figure 31)

- identity detection logic gate means within the comparison means (Figures 31 and 36)

Regarding claim 6:

Miyazawa et. al. teaches,

- a calculation circuit for calculating logical fuzzy union and intersection operations (column 2, lines 11-14,

"a calculation circuit for obtaining a minimum value and a calculation circuit for obtaining a maximum value for use in a digital fuzzy inference system, which are simple in construction")

- subtracter and comparison means using the sign of the difference (column 2, lines 44-48,

"a calculation circuit for obtaining a difference between binary data of the inflection point and input binary data and multiplier or divider for multiplying or dividing the difference by a one of values which is in accordance with a plus or minus sign of the difference")

- a data selection means in a fuzzy union and intersection calculation circuit (Figure 31)

- identity detection logic gate means within the comparison means (Figures 31 and 36)

- XOR logic gate means within the fuzzy union and intersection calculation circuit (column 18, lines 50-51,

"EXCLUSIVE-OR circuit 61a of comparison operation circuit")

Regarding claim 7:

Miyazawa et. al. teaches,

- a calculation circuit for calculating logical fuzzy union and intersection operations

(column 2, lines 11-14,

"a calculation circuit for obtaining a minimum value and a calculation circuit for obtaining a maximum value for use in a digital fuzzy inference system, which are simple in construction")

- subtracter and comparison means using the sign of the difference (column 2, lines 44-48,

"a calculation circuit for obtaining a difference between binary data of the inflection point and input binary data and multiplier or divider for multiplying or dividing the difference by a one of values which is in accordance with a plus or minus sign of the difference")

- a data selection means in a fuzzy union and intersection calculation circuit (Figure 31)

- a multiplexer means for the data selector of Figure 31 (Figures 34)

Regarding claim 8:

Miyazawa et. al. teaches,

- a calculation circuit for calculating logical fuzzy union and intersection operations

(column 2, lines 11-14,

"a calculation circuit for obtaining a minimum value and a calculation circuit for obtaining a maximum value for use in a digital fuzzy inference system, which are simple in construction")

- subtracter and comparison means using the sign of the difference (column 2, lines 44-48,

"a calculation circuit for obtaining a difference between binary data of the inflection point and input binary data and multiplier or divider for multiplying or dividing the difference by a one of values which is in accordance with a plus or minus sign of the difference")

- a data selection means in a fuzzy union and intersection calculation circuit (Figure 31)

- a multiplexer means for the data selector of Figure 31 (Figures 34)

- first and second multiplexers as data selectors in Figure 31 (column 15, lines 7–9,

"First and second coefficient specifying circuits 396 and 397 each are selectors")

- non-fuzzy logical operations (column 26, lines 42-48,

"Next, center-of-gravity calculation circuit 950 will be described. The center-of-gravity calculation is to vary fuzzy inferential results obtained by the membership synthesizing circuit 940 to non-fuzzy values (to obtain the gravity center of fuzzy inferential results), thereby to obtain an output value (definite value) of a fuzzy controller")

Regarding claim 9:

Miyazawa et. al. teaches,

- a calculation circuit for calculating logical fuzzy union and intersection operations

(column 2, lines 11-14,

"a calculation circuit for obtaining a minimum value and a calculation circuit for obtaining a maximum value for use in a digital fuzzy inference system, which are simple in construction")

- subtracter and comparison means using the sign of the difference (column 2, lines 44-

48,

"a calculation circuit for obtaining a difference between binary data of the inflection point and input binary data and multiplier or divider for multiplying or dividing the difference by a one of values which is in accordance with a plus or minus sign of the difference")

- a data selection means in a fuzzy union and intersection calculation circuit (Figure 31)

- a multiplexer means for the data selector of Figure 31 (Figures 34)

- first and second multiplexers as data selectors in Figure 31 (column 15, lines 7–9,

"First and second coefficient specifying circuits 396 and 397 each are selectors")

- non-fuzzy logical operations (column 26, lines 42-48,

"Next, center-of-gravity calculation circuit 950 will be described. The center-of-gravity calculation is to vary fuzzy inferential results obtained by the membership synthesizing circuit 940 to non-fuzzy values (to obtain the gravity center of fuzzy inferential results), thereby to obtain an output value (definite value) of a fuzzy controller")

Regarding claim 10:

Miyazawa et. al. teaches,

- a calculation circuit for calculating logical fuzzy union and intersection operations

(column 2, lines 11-14,

"a calculation circuit for obtaining a minimum value and a calculation circuit for obtaining a maximum value for use in a digital fuzzy inference system, which are simple in construction")

- subtracter and comparison means using the sign of the difference (column 2, lines 44-

48,

"a calculation circuit for obtaining a difference between binary data of the inflection point and input binary data and multiplier or divider for multiplying or dividing the difference by a one of values which is in accordance with a plus or minus sign of the difference")

- a data selection means in a fuzzy union and intersection calculation circuit (Figure 31)

- a multiplexer means for the data selector of Figure 31 (Figures 34)

- first and second multiplexers as data selectors in Figure 31 (column 15, lines 7–9,

"First and second coefficient specifying circuits 396 and 397 each are selectors")

- non-fuzzy logical operations (column 26, lines 42-48,

"Next, center-of-gravity calculation circuit 950 will be described. The center-of-gravity calculation is to vary fuzzy inferential results obtained by the membership synthesizing circuit 940 to non-fuzzy values (to obtain the gravity center of fuzzy inferential results), thereby to obtain an output value (definite value) of a fuzzy controller")

Regarding claim 11:

Miyazawa et. al. teaches,

- a calculation circuit for calculating logical fuzzy union and intersection operations

(column 2, lines 11-14,

"a calculation circuit for obtaining a minimum value and a calculation circuit for obtaining a maximum value for use in a digital fuzzy inference system, which are simple in construction")

- subtracter and comparison means using the sign of the difference (column 2, lines 44-48,

"a calculation circuit for obtaining a difference between binary data of the inflection point and input binary data and multiplier or divider for multiplying or dividing the difference by a one of values which is in accordance with a plus or minus sign of the difference")

- a data selection means in a fuzzy union and intersection calculation circuit (Figure 31)

- identity detection logic gate means within the comparison means (Figures 31 and 36)

- XOR logic gate means within the fuzzy union and intersection calculation circuit

(column 18, lines 50-51,

"EXCLUSIVE-OR circuit 61a of comparison operation circuit")

Regarding claim 12:

Miyazawa et. al. teaches,

- a calculation circuit for calculating logical fuzzy union and intersection operations

(column 2, lines 11-14,

"a calculation circuit for obtaining a minimum value and a calculation circuit for obtaining a maximum value for use in a digital fuzzy inference system, which are simple in construction")

- subtracter and comparison means using the sign of the difference (column 2, lines 44-48,

"a calculation circuit for obtaining a difference between binary data of the inflection point and input binary data and multiplier or divider for multiplying or dividing the difference by a one of values which is in accordance with a plus or minus sign of the difference")

- a data selection means in a fuzzy union and intersection calculation circuit (Figure 31)

Regarding claim 13:

Miyazawa et. al. teaches,

- a calculation circuit for calculating logical fuzzy union and intersection operations (column 2, lines 11-14,

"a calculation circuit for obtaining a minimum value and a calculation circuit for obtaining a maximum value for use in a digital fuzzy inference system, which are simple in construction")

- subtracter and comparison means using the sign of the difference (column 2, lines 44-48,

"a calculation circuit for obtaining a difference between binary data of the inflection point and input binary data and multiplier or divider for multiplying or dividing the difference by a one of values which is in accordance with a plus or minus sign of the difference")

- a data selection means in a fuzzy union and intersection calculation circuit (Figure 31)

- a multiplexer means for the data selector of Figure 31 (Figures 34)

- first and second multiplexers as data selectors in Figure 31 (column 15, lines 7–9,

"First and second coefficient specifying circuits 396 and 397 each are selectors")

- non-fuzzy logical operations (column 26, lines 42-48,

"Next, center-of-gravity calculation circuit 950 will be described. The center-of-gravity calculation is to vary fuzzy inferential results obtained by the membership synthesizing circuit 940 to non-fuzzy values (to obtain the gravity center of fuzzy inferential results), thereby to obtain an output value (definite value) of a fuzzy controller")

Regarding claim 14:

Miyazawa et. al. teaches,

- a calculation circuit for calculating logical fuzzy union and intersection operations

(column 2, lines 11-14,

"a calculation circuit for obtaining a minimum value and a calculation circuit for obtaining a maximum value for use in a digital fuzzy inference system, which are simple in construction")

- subtracter and comparison means using the sign of the difference (column 2, lines 44-48,

"a calculation circuit for obtaining a difference between binary data of the inflection point and input binary data and multiplier or divider for multiplying or dividing the difference by a one of values which is in accordance with a plus or minus sign of the difference")

- a data selection means in a fuzzy union and intersection calculation circuit (Figure 31)

- a multiplexer means for the data selector of Figure 31 (Figures 34)

- first and second multiplexers as data selectors in Figure 31 (column 15, lines 7–9,

"First and second coefficient specifying circuits 396 and 397 each are selectors")

- non-fuzzy logical operations (column 26, lines 42-48,

"Next, center-of-gravity calculation circuit 950 will be described. The center-of-gravity calculation is to vary fuzzy inferential results obtained by the membership synthesizing circuit 940 to non-fuzzy values (to obtain the gravity center of fuzzy inferential results), thereby to obtain an output value (definite value) of a fuzzy controller")

Regarding claim 15:

Miyazawa et. al. teaches,

- a calculation circuit for calculating logical fuzzy union and intersection operations

(column 2, lines 11-14,

"a calculation circuit for obtaining a minimum value and a calculation circuit for obtaining a maximum value for use in a digital fuzzy inference system, which are simple in construction")

- subtracter and comparison means using the sign of the difference (column 2, lines 44-48,

"a calculation circuit for obtaining a difference between binary data of the inflection point and input binary data and multiplier or divider for multiplying or dividing the difference by a one of values which is in accordance with a plus or minus sign of the difference")

- a data selection means in a fuzzy union and intersection calculation circuit (Figure 31)

Regarding claim 16:

Miyazawa et. al. teaches,

- a calculation circuit for calculating logical fuzzy union and intersection operations

(column 2, lines 11-14,

"a calculation circuit for obtaining a minimum value and a calculation circuit for obtaining a maximum value for use in a digital fuzzy inference system, which are simple in construction")

- subtracter and comparison means using the sign of the difference (column 2, lines 44-48,

"a calculation circuit for obtaining a difference between binary data of the inflection point and input binary data and multiplier or divider for multiplying or dividing the difference by a one of values which is in accordance with a plus or minus sign of the difference")

- XOR logic gate means within the fuzzy union and intersection calculation circuit

(column 18, lines 50-51,

"EXCLUSIVE-OR circuit 61a of comparison operation circuit")

- a data selection means in a fuzzy union and intersection calculation circuit (Figure 31)

Regarding claim 17:

Miyazawa et. al. teaches,

- a calculation circuit for calculating logical fuzzy union and intersection operations

(column 2, lines 11-14,

"a calculation circuit for obtaining a minimum value and a calculation circuit for obtaining a maximum value for use in a digital fuzzy inference system, which are simple in construction")

- subtracter and comparison means using the sign of the difference (column 2, lines 44-48,

"a calculation circuit for obtaining a difference between binary data of the inflection point and input binary data and multiplier or divider for multiplying or dividing the difference by a one of values which is in accordance with a plus or minus sign of the difference")

- a data selection means in a fuzzy union and intersection calculation circuit (Figure 31)

- a multiplexer means for the data selector of Figure 31 (Figures 34)

- first and second multiplexers as data selectors in Figure 31 (column 15, lines 7–9,

"First and second coefficient specifying circuits 396 and 397 each are selectors")

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Miyazawa et. al.* U.S. Patent Number 5,343,553 (August 30, 1994) in view of *Tsutsumi et. al.* U.S. Patent Number 5,335,314 (August 2, 1994).

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Regarding claim 2:

Miyazawa et. al. teaches,

- a calculation circuit for calculating logical fuzzy union and intersection operations

(column 2, lines 11-14,

"a calculation circuit for obtaining a minimum value and a calculation circuit for obtaining a maximum value for use in a digital fuzzy inference system, which are simple in construction")

- subtracter and comparison means using the sign of the difference (column 2, lines 44-48,

"a calculation circuit for obtaining a difference between binary data of the inflection point and input binary data and multiplier or divider for multiplying or dividing the difference by a one of values which is in accordance with a plus or minus sign of the difference")

- a data selection means in a fuzzy union and intersection calculation circuit (Figure 31)

- a multiplexer means for the data selector of Figure 31 (Figures 34)

- first and second multiplexers as data selectors in Figure 31 (column 15, lines 7–9,

"First and second coefficient specifying circuits 396 and 397 each are selectors")

However, *Miyazawa et. al.* doesn't explicitly teach outputting both fuzzy and non-fuzzy logic results while *Tsutsumi et. al.* teaches,

- a fuzzy inference apparatus (title) with a non-fuzzy logic operating mode that also outputs fuzzy logic results (Figures 1, 4, 11, 14 and 15 and the Abstract,

"In order to simplify the fuzzy inference engine, nonfuzzy output is obtained through a simple arithmetic operation")

Motivation – The portions of the claimed method using non-fuzzy logic would have been a highly desirable feature in this art for "representing the center position of the membership function of the consequent, the nonfuzzy output (center of gravity)" (column 6, lines 1-3) as *Tsutsumi et. al.* recognizes and *Miyazawa et. al.* allows for when the "calculated value of the center of gravity serves as an output for a fuzzy control" (column 6, lines 59-61).Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to combine *Tsutsumi et. al.* with *Miyazawa et. al.* to obtain the invention specified in claim 2.

Regarding claim 3:

Miyazawa et. al. teaches,

- a calculation circuit for calculating logical fuzzy union and intersection operations (column 2, lines 11-14,

"a calculation circuit for obtaining a minimum value and a calculation circuit for obtaining a maximum value for use in a digital fuzzy inference system, which are simple in construction")

- subtracter and comparison means using the sign of the difference (column 2, lines 44-48,

"a calculation circuit for obtaining a difference between binary data of the inflection point and input binary data and multiplier or divider for multiplying or dividing the difference by a one of values which is in accordance with a plus or minus sign of the difference")

- a data selection means in a fuzzy union and intersection calculation circuit (Figure 31)

- a multiplexer means for the data selector of Figure 31 (Figures 34)

- first and second multiplexers as data selectors in Figure 31 (column 15, lines 7–9,

"First and second coefficient specifying circuits 396 and 397 each are selectors")

However, *Miyazawa et. al.* doesn't explicitly teach outputting both fuzzy and non-fuzzy logic results while *Tsutsumi et. al.* teaches,

- a fuzzy inference apparatus (title) with a non-fuzzy logic operating mode that also outputs fuzzy logic results (Figures 1, 4, 11, 14 and 15 and the Abstract,

"In order to simplify the fuzzy inference engine, nonfuzzy output is obtained through a simple arithmetic operation")

Motivation – The portions of the claimed method using non-fuzzy logic would have been a highly desirable feature in this art for "representing the center position of the membership function of the consequent, the nonfuzzy output (center of gravity)" (column 6, lines 1-3) as *Tsutsumi et. al.* recognizes and *Miyazawa et. al.* allows for when the "calculated value of the center of gravity serves as an output for a fuzzy control" (column 6, lines 59-61).Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to combine *Tsutsumi et. al.* with *Miyazawa et. al.* to obtain the invention specified in claim 3.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- *A. Miyazawa, T. Suzuki, K. Mizobuchi*; "Digital Fuzzy Inference System Using Logic Circuits"; U.S. Patent Number 5,343,553; August 30, 1994

- *Y. Tsutsumi, J. Nishimura*; "Fuzzy Inference Apparatus"; U.S. Patent Number 5,335,314; August 2, 1994

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Meltin Bell whose telephone number is 703-305-0362. The examiner can normally be reached on Mon - Fri 7:30 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anil Khatri can be reached on 703-305-0282. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

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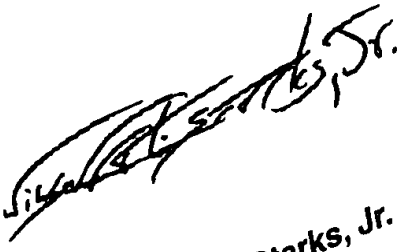

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